

ABSTRACT

A tissue ablation probe, system, and method are provided. The ablation probe comprises an elongated member, an ablative element mounted on the distal end of the elongated member, and at least one thermoelectric device mounted to the member in thermal communication with the ablative element. The system may include the ablation probe, thermal control circuitry for controlling the thermal effect of the thermoelectric device, and an ablation source for supplying ablation energy to the ablative element. A plurality of circumferentially distributed thermoelectric devices can be provided, so that radial tissue sectors can be selectively affected by independently controlling the thermal effect of the thermoelectric devices. In one embodiment, the thermoelectric device(s) can be used to cool a heat ablative element. In another embodiment, the thermoelectric device(s) can be used to heat an ablative element, thereby forming a heat ablative element. In still another embodiment, the thermoelectric device(s) can be used to cryogenically cool an ablative element, thereby forming a cryogenic ablative element.